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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,181	09/09/2003	Chun-Jun Chiu	CHIU3030/EM	1619
2292	7590	09/30/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LUU, AN T	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/657,181	CHIU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	An T. Luu	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 09 September 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,4-11 and 14-19 is/are rejected.
- 7) Claim(s) 2,3,12 and 13 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5-6, 8, 15-16 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, the limitation “a second operational amplifier” is not properly recited since there is no “a first operational amplifier” recited previously in its parent claim(s). The rest of the limitations of claim have similar problem as noted above (i.e., a sixth resistor, second capacitor).

Claims 6, 15 and 16 have the same problems as that of claim 5.

As to claims 8 and 18, there is no reference point such that “the first duty cycle is located between 5% and 95%”.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by the Seong reference (U.S. Patent 5,606,296).

Seong discloses in figure 3 an apparatus comprising a duty cycle converting circuit 301 for receiving a first PWM signal Vo and then generating a duty cycle reference voltage Vcon

based on a first duty cycle of the first PWM signal, wherein the duty cycle reference voltage is a one-to-one mapping function of the first duty cycle (Vcon is derived from Vo with respect to Voref), and a frequency fixed PWM signal generating circuit (the rest of the circuit), coupled to the duty cycle converting circuit, for receiving the duty cycle reference voltage and then outputting a second PWM signal (PWM output) having a fixed frequency, wherein the second PWM signal has a second duty cycle determined on the basis of the duty cycle reference voltage, and the second duty cycle is a one-to-one mapping function of the duty cycle reference voltage (“PWM output” is derived from Vcon and Vtr) as required by claim 1.

As to claim 4, Seong discloses the frequency fixed PWM signal generating circuit comprising a frequency controller (100 and 200) for providing a frequency control signal Vtr to determine the fixed frequency of the second PWM signal, and a PWM signal generator 302, coupled to the duty cycle converting circuit and the frequency controller, for generating the second PWM signal in response to the duty cycle reference voltage and the frequency control signal.

As to claim 7, Seong discloses (col. 2, line 64) Vtr being a continuous triangular wave signal.

As to claims 8 and 9 (as understood in view of 112 issue noted above), Seong discloses in col. 1, lines 14-18, the operating frequencies being beyond tens of kilohertz.

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6, 10-11, 14, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Seong reference (U.S. Patent 5,606,296) in view of the Hoffman reference (U.S. Patent 5,457,435).

Seong discloses all the claimed invention of claim 6 including a operational amplifier 302 having a non-inverting input terminal connected to the duty cycle converting circuit for receiving the duty cycle reference voltage and an inverting terminal connected to the frequency controller for receiving the frequency control signal as partially required by the claim. Seong does not disclose a resistor having a terminal connected to an output terminal of the operational amplifier such that the second PWM signal is output through another terminal of the resistor as required by claim.

Hoffman discloses in figure 2 a PWM circuit comprising a operational amplifier 224 having an output coupled to a resistor 230 and the PWM signal is output through another terminal of the resistor as required by claim.

It would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Hoffman into that of Seong since a resistor is commonly used to drive a signal.

A skilled artisan in the art would have been motivated to combine the above prior art to shape the PWM signal to a desired level suitable for downstream device of the circuit as required by a particular application.

As to claims 10 and 11, the scopes of claims are similar to that of claim 6. Therefore, they are rejected for the same reason set forth above. It is noted that the limitation “thereby controlling the speed of the fan motor” is seen as “intended use”; and resistor 230 (figure 2) and load 112 (figure 1) of Hoffman are seen as a driving circuit and fan motor, respectively.

As to claim 14, the scope of claim is similar to that of claim 4. Therefore, it is rejected for the same reason set forth above.

As to claims 16-19, the scopes of claims are similar to that of claims 6-9. Therefore, they are rejected for the same reasons set forth above.

***Allowable Subject Matter***

7. Claims 2, 3, 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. Claims 5 and 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to disclose an apparatus comprising elements being configured as recited in claim. Specifically, none of the prior art teaches or suggests, among other things, the claimed structures of “the duty cycle converting circuit” as recited in claims 2 and 12; the limitation “a

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microchip control unit set through software programs" as recited in claims 3 and 13; and the claimed structure of "the frequency controller" as required by claims 5 and 15.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to An T. Luu whose telephone number is 571-272-1746. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

An T. Luu  
9-24-04 *ATL*



TIMOTHY P. CALLAHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800